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# *Chances and challenges for improving quality and safety of oral health care*

INAUGURAL SPEECH BY PROF. DR. STEFAN LISTL

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redo*

*change perspective*

Radboud Universiteit



INAUGURAL SPEECH  
PROF. DR. STEFAN LISTL



Several chances and challenges exist when seeking to improve individual and population oral health: Oral diseases are mainly determined by people's health behaviours, particularly nutrition and oral hygiene. Careful use of available resources and a good balance of public health and chairside

care warrant best possible oral health for everyone. Existing payment methods for oral health professionals, particularly fee-for-service, have been shown to have disadvantages. Value-based payment mechanisms may provide advantages in terms of incentivizing good quality care but can also have negative side effects if oral health professionals feel being over-controlled. Transparent information about quality and safety has the potential to facilitate further improvements in oral health care. Adequate data sources and information systems are required to provide sensible feedback information.

Stefan Listl (Regensburg, 1981) studied dentistry and economics at the universities of Regensburg, York, and Mannheim. Since 2009, he has been working at Heidelberg University, University of Mannheim, McMaster University, and New York University. In collaboration with the ADA Health Policy Institute, he served as a consultant within Harvard University's Malaysia Health Systems Reform Project. He currently holds affiliations with the Max Planck Society, the International Consortium for Health Outcomes Measurement, the FDI World Dental Federation, and the International Centre for Oral Health Inequalities Research and Policy. His research has been supported by funding institutions such as the European Commission and NIH (USA).

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CHANCES AND CHALLENGES FOR IMPROVING QUALITY  
AND SAFETY OF ORAL HEALTH CARE



## **Chances and challenges for improving quality and safety of oral health care**

*Inaugural speech delivered on the acceptance of the post of Professor of Quality and Safety of Oral Health Care at Radboud University/Radboud university medical center on Thursday 22 June 2017*

**door prof. dr. Stefan Listl**

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*Dear rector, colleagues, ladies and gentlemen,*

*Dentists and economists:* these are two groups of people I've been heavily exposed to during the past few years. I've made various observations, but I'm not the first and only one to do so. Others have had experiences with dentists and economists before. One of them was the famous economist John Maynard Keynes. He said:

*"If economists could manage to get themselves thought of as humble, competent people on a level with dentists, that would be splendid." (Keynes 1931)*

Now I'm not going to comment on the irony in this quote. Instead I want to focus on the notion of being "humble". Being humble is not only a virtue of high general relevance. But it is also the principle which I tried to apply when preparing for my inaugural lecture today. So, I want to be humble and focus on just four chances and challenges today. And these are:

1. Quality measures: how to measure quality and safety of oral health care?
2. Provider payment: how to pay oral health professionals adequately?
3. Value for money: how to prioritise cost-efficient interventions for better oral health?
4. Tackling inequalities: how to reduce social inequalities in oral health and care?

Before getting down to detail, I want to invite you to zoom out a little and reflect on why these four topics (see above) may be relevant. One way to do this is to consider the dynamics of expenditure on health care over the past years and decades. Health care costs (as a proportion of gross domestic product) have been increasing in many countries worldwide, including the Netherlands (OECD 2015). Many societies are spending a larger proportion of their available resources on health care with the intention of increasing people's wellbeing, not least via investments in medical-technical innovation. But as we're living in a world in which resources are not unlimited, this means that a smaller proportion of total resources is used for "other things" although these may also be important for people's wellbeing. In other words, there are trade-offs: higher investment in health care necessitates lower investment outside health care. Against this background, consumers and societies increasingly ask for an explicit demonstration of the value-add of innovations in health care and greater transparency concerning the quality and safety of health care.

How does oral health care fit into the broader picture? Dental care does not always seem to be perceived as a costly type of health care. However, given that dental diseases are still amongst the most prevalent diseases worldwide and many people frequently



use oral health care, expenditure on oral health care continues to amount to a substantial part of health care expenditure. For example, a recent estimate for European Union countries suggests that yearly expenditure on oral diseases ranks in between the expenditure due to cardiovascular diseases and Alzheimer's disease (see figure 1; Listl et al. 2015). Consequently, consumers and societies will not only increasingly ask for an explicit demonstration of the value-add of innovations in health care, but also of innovations in oral health care.

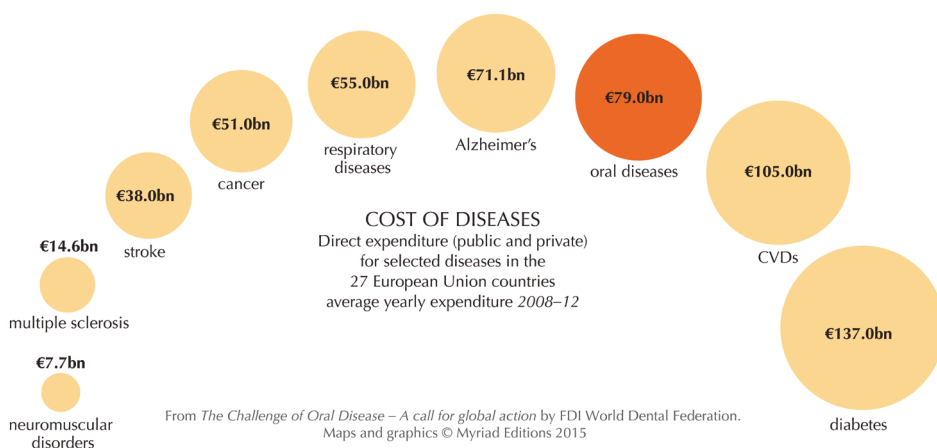


Figure 1: direct expenditure for oral and selected other diseases (Listl et al. 2015)

But if the goal is to make best use of whatever resources are available to us, the relevant question is NOT to ask: *How can health and dental care expenditure be reduced?* Instead, the more sensible question - and core principle for addressing the four chances and challenges introduced above - is:

How can population wellbeing be maximised given available resources? (Birch and Listl, 2015)

I now want to address the four chances and challenges introduced at the beginning and invite you to zoom in again.

#### HOW TO MEASURE QUALITY AND SAFETY OF ORAL HEALTH CARE?

Several theoretical frameworks exist which conceptualise the quality of health care. I want to refer to the framework established by the US Institute of Medicine which distinguishes between the following six domains determining the quality of health care (Institute of Medicine 2001):

- *Safety*: avoiding harm to patients
- *Effectiveness*: providing care based on scientific knowledge
- *Person-centredness*: providing care that is respectful and responsive to the individual patient
- *Timeliness*: avoiding unnecessary delays in the provision of care
- *Efficiency*: avoiding waste of resources
- *Equity*: care should not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status.

The above definition of quality of health care has a lot of appeal in many ways. However, one remaining challenge is to concretely translate broad conceptual frameworks to oral health care and operationalise them for use in daily practice (Dental Quality Alliance 2016; Baadoudi et al. 2017). In doing this, key steps include:

- (i) Finding a consensus between all relevant stakeholder groups involved in oral health care,
- (ii) Extracting measures from available data, and
- (iii) Visualising measures so that they are user-friendly.

Each of these steps comes with specific complexities. First, stakeholder interests can be heavily conflicting with each other, making it difficult to reach a harmonised consensus. Second, major gaps still exist in the availability, quality and processing of routinely collected and harmonised data which provide robust information about processes and, even more importantly, the outcomes of oral health care. Third, relatively little experience exists with regard to the practical requirements and preferences of decision makers when using information systems reflecting quality and safety of oral health care.

With respect to activities in my new academic role, I want to highlight one example (see figure 2). This relates to integrating patient-reported measures and electronic health records at Radboudumc. At the department of quality and safety of oral health care we are currently working towards a consensus-based definition of quality and safety measures, using a RAND-modified Delphi procedure. After establishing this consensus, we intend to compute concrete quality/safety measures on the basis of data extracted from electronic health records and patient-reported measures collected via a mobile computing application. In this context, a very useful infrastructure for integration and visualisation of these measures is a state-of-the-art Digital Research Environment (DRE) which has recently become available at Radboudumc. Using this innovative infrastructure, the intention is to implement novel quality/safety measures in the department of dentistry of Radboudumc and to facilitate routine feedback loops

for continuous improvement of patient-centred care. This approach also has potential for use in other settings, including other dental schools and dental practices and applications in the broader context of health care (beyond dental).

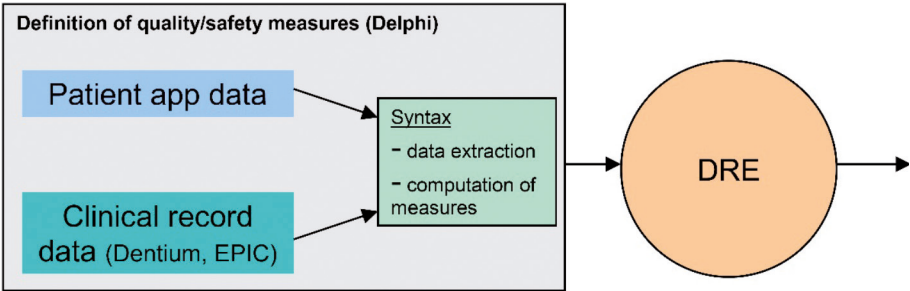


Figure 2: Integrating patient-reported measures and electronic health records at Radboudumc

Perhaps one more word about mobile computing applications, just to highlight recent developments in information technology which are relevant in the context of providing patient-centred feedback on quality and safety of oral health care. In my role as one of the Principal Investigators of the EU Horizon 2020 project ADVOCATE ([www.advocateoralhealth.com](http://www.advocateoralhealth.com)), I previously proposed and initiated the development of a mobile computing application to collect feedback information from patients with the intention to improve oral health care. The app was then further developed in collaboration with Aridhia Ltd., ACTA Amsterdam and Heidelberg University and is currently already being used for data collection in dental practices in the Netherlands, Denmark and Germany. The application is intended to serve as a precursor version for collecting patient-reported information at Radboudumc. Therefore, implementation of patient-centred feedback via electronic information systems and routine feedback loops at Radboudumc’s dental department is already in closer reach.

More generally, the *chances* of measuring quality and safety of oral health care lie within the potential to further improve oral health care via routine feedback loops. But there are still several *challenges* concerning the adequacy of feedback information. In addition to the challenges mentioned previously (see above), it is essential that whoever is intended to use this feedback information really trusts the information provided and does not feel burdened by excessive measurement or processing of information. In other words, information systems should be designed to measure only what matters (Berwick 2016). This also applies to ongoing and planned activities within the department of quality and safety of oral health care here at Radboud University. Our activities are linked with international partners. These include the EU Horizon 2020

project ADVOCATE, the International Consortium for Health Outcomes Measurement ([www.ichom.org](http://www.ichom.org)) and the FDI World Dental Federation Vision 2020 Think Tank. I'm a member of these three international initiatives. The recent international interest in establishing harmonised measures for processes and outcomes of oral health care gives strong hopes and aspirations for further improvements in quality and safety of oral health care.

#### HOW TO PAY ORAL HEALTH PROFESSIONALS ADEQUATELY?

The key question to ask here is: "What's the best way to pay a dentist?". This may be considered from different perspectives. In the role of a patient, you may wonder: "How is my dentist paid? Does this allow her/him to provide exactly the care that I want - no more, no less?". If you are an oral health professional, you may wonder: "How am I paid? How much flexibility does this give me to act always and only in the interest of my patients?"

When trying to answer these questions, it can be useful to consider how oral health professionals have traditionally been paid in many countries and settings worldwide:

The most widespread method of provider payment in oral health care continues to be fee-for-service. This means that the provider is paid an additional amount of money for each additional service provided. One disadvantage of this type of reimbursement is that it can give an incentive for provision of too many services. The concern with respect to quality and safety of oral health care is then that fee-for-service might lead to over-treatment and potentially harmful provision of (oral) health care (Birch & Listl 2015).

On the other hand, we see salary and capitation payments as frequent types of provider payment in oral health care. This means that a provider receives a fixed amount of money before any care is provided. In other words, provider payment is independent of provider effort. One disadvantage of these types of reimbursement is that they can give incentives for too few services. The concern with respect to quality and safety of oral health care is then that salary or capitation payments might lead to under-treatment and potentially harmful no-provision of (oral) health care (Birch & Listl 2015).

If we look at the current scenarios of provider payment in oral health care, some conclusions can be drawn. One way to do this – which I personally like a lot – is to express this in the words of James Robinson who said:

*There are many mechanisms for paying physicians; some are good and some are bad. The three worst are fee-for-service, capitation and salary. (Robinson, 2001)*

But what is an adequate alternative (other than fee-for-service, capitation and salary) to pay oral health professionals? Something that is being discussed more and more, mainly in medicine, is Value-Based Payment (VBP). The idea of VBP is to link payments with quality measures in such a way that good quality in health care is incentivised. So far, however, implementation of VBP in medicine has been very challenging and very few attempts have been made to introduce VBP in oral health care. Therefore, a major complexity in establishing VBP relates to challenges in measuring outcomes of care, that is the health and well-being of patients during and following treatment. As mentioned earlier in this talk, finding stakeholder consensus and limited availability of routine data sources with information about relevant measures can pose considerable barriers. Whenever an outcome domain of (oral) health care is perceived to be relevant by patients and/or providers, but cannot be measured sensibly, this creates implicit disincentives for things that should matter. Consequently, it is probably not very surprising to observe a lack of provider acceptance of VBP as is currently the case.

The *chance* of VBP is that it may lead to better quality/safety of oral health care. Yet a *major challenge* in establishing VBP in oral health care is that there is currently an enormous lack of robust measures reflecting the processes and outcomes of oral health care. Relating also to the absence of comprehensive quality measures, providers of oral health care may feel they are being “over-controlled” when reimbursement systems put a lot of emphasis on quantifying things which may not necessarily reflect all relevant domains of good quality in (oral) health care. Being aware of these challenges is highly relevant for ongoing and planned activities within the department of quality and safety of oral health care here at Radboud University. This applies to careful development of quality/safety measures, to mindful investigations of previous changes in provider payment systems in various countries and settings as well as to “one-step-at-a-time” testing of the feasibility of VBP in close collaboration with patients and oral health professionals.

#### HOW TO PRIORITISE COST-EFFICIENT INTERVENTIONS FOR BETTER ORAL HEALTH?

A question that comes up frequently and will likely be asked more often in the future is: “Does a more effective but more expensive intervention represent value for money?” This is the classical and central question about the cost-efficiency of alternative interventions. For the evaluation of health care, health economists have established several methods to prioritise interventions according to cost efficiency or, in other words, value-for-money. Within the “toolbox” of health economic evaluation, the three most prominent methods are:

- Cost-effectiveness analysis (CEA)
- Cost-utility analysis (CUA)
- Cost-benefit analysis (CBA)

All three methods can be useful for identifying cost-efficient interventions in oral health care. However, they differ in the way they incorporate the outcomes of interventions. CEA measures health outcomes in terms of natural units such as tooth survival or caries increments. This technique is typically used to compare interventions within one domain of health care such as, for example, fluoride varnish versus fissure sealants for chairside prevention of dental caries. CUA usually measures health outcomes in terms of Quality-Adjusted-Life-Years (QALYs). CUA is therefore suitable for comparing interventions across various domains of health care such as, for example, influenza vaccinations versus dental implants. Finally, CBA measures health outcomes in terms of monetary values. CBA enables the assessment of intrinsic value (an intervention is only worth doing if the benefits exceed the costs of the intervention) and comparison of interventions within and outside health care (Listl & Faggion Jr., 2016).

The “toolbox” of health economic evaluation covers a broad range of methods to compare various types of interventions. But which type of interventions are promising to further improve value-for-money – and thereby quality and safety – in oral health care? One conceptual way to look at this is to consider at which point of time interventions are positioned alongside the continuum of oral health care (see figure 3). Here, the continuum of care starts with “need for care”, moves on to “access to care” and then finally moves to “treatment decision”. Potential intervention points alongside the continuum of care can either be preventive or restorative. Moreover, interventions can be provided via public health care or chairside care. Traditionally, dental care and research have focused more on chairside interventions and restorative care than public health prevention (Watt et al. 2016; Niederman et al. 2017). In other words, there is considerable scope to add to the knowledge base on the comparative value-for-money of public health prevention versus chairside interventions.

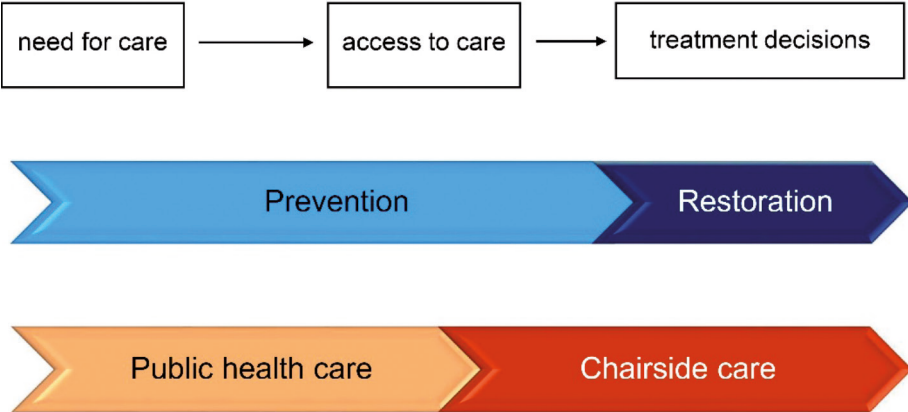


Figure 3: the continuum of oral health care

To sum up, the *chance* of health economic evaluation is that it may facilitate better value-for-money in oral health care. The main *challenge* in this field is to ensure an adequate mix of public health and chairside care. While theoretical considerations about the efficiency of various interventions in oral health care may identify advantages of investing more broadly in public health prevention and addressing common risk factors of multiple diseases (such as sugar consumption as a risk factor for diabetes and caries), it is important to be aware of a previously strong focus on and investment in chairside restorative strategies in oral health care. Against this background, ongoing and planned activities within the department of quality and safety of oral health care here at Radboud University primarily target the value-for-money of public health prevention while being mindful of developments in chairside care.

#### HOW TO REDUCE SOCIAL INEQUALITIES IN ORAL HEALTH AND CARE?

Social inequalities in oral health and care have been known for a very long time. However, despite numerous attempts to address these inequalities, they continue to persist (Watt et al. 2016). In this light, it seems relevant to obtain a better understanding of the extent to which dental care use may or may not serve as a relevant intervention point to reduce social inequalities in oral health and care. In recent work, we can show that dental care use partially explains social inequalities in oral health (Shen & Listl 2017), suggesting that dental utilisation may be one of several potentially relevant intervention points. But what are the underlying reasons for people not to seek dental care?

In previous work funded by the US National Institute for Dental and Craniofacial Research (NIDCR), we investigated the reasons why some people in European countries don't go to the dentist regularly (Listl et al. 2014). The data used in this study was obtained from the Survey of Health Ageing and Retirement (SHARE). Within SHARE, study participants aged 50 and older were asked whether they had ever sought dental care on a regular basis throughout their life so far. Respondents who replied "no" were then asked about the reasons why they had never sought regular dental care before. Reasons for dental non-attendance were classified according to the Andersen framework of health care use (Andersen 1968) as follows (see figure 4):

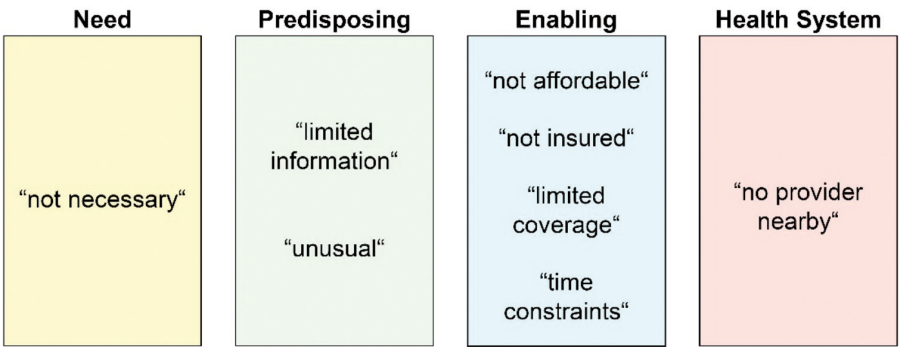


Figure 4: various reasons of dental non-attendance (Listl et al. 2014)

The main reasons for dental non-attendance in many countries (including the Netherlands) was found to be that regular dental care was perceived as "not necessary" and that regular dental care was considered "unusual" (Listl et al. 2014). This pattern was observed mainly for people from the lower end of the socioeconomic scale. This suggests that policies aimed at oral health promotion (such as raising awareness for the benefits of regular dental attendance) may be highly relevant to reduce social inequalities in oral health and care.

The traditional way of thinking in the biomedical disciplines has primarily been centred around biological risk factors which can lead to diseases requiring treatment. Biological risk factors for oral diseases are, however, largely influenced by peoples' health behaviour, not least sugar consumption and oral hygiene. In addition, health behaviour and health awareness have previously been shown to be shaped by broader social determinants such as social networks, social exclusion and participation in the labour market. Accordingly, it seems sensible to consider these broader determinants as intervention points which are also relevant in the context of inequalities in oral health and care (Watt et al. 2016).



Overall, the *chance* is that social inequalities in oral health and care can be reduced further. As outlined above, however, the main *challenge* is to identify suitable intervention points. In this regard, ongoing and planned activities within the department of quality and safety of oral health care here at Radboud University are centred around obtaining greater insight into the impact of policy interventions addressing broader social determinants. Comparisons across countries and welfare state regimes form an essential element within these investigations. We are also collaborating closely with the International Center for Oral Health Inequalities Research and Policy ([www.icohirp.com](http://www.icohirp.com)) which is a global network of academics and policy makers that seeks to explore the nature and cause of oral health inequalities to shape future policy.

ZOOMING OUT AGAIN

After having discussed in some detail the chances and challenges involved in seeking to further improve the quality and safety of oral health care, it is now time to briefly summarise the goals of my chair and professorship at Radboud University:

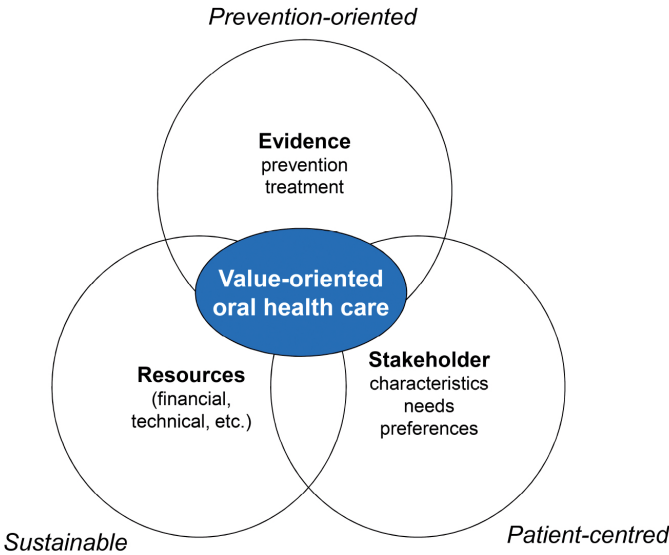


Figure 5: towards more value-oriented oral health care

The aim is to strengthen value-oriented oral health care by making the best use of available evidence, stakeholder preferences and available resources (see figure 5). This means: *emphasising patient-centred, prevention-oriented and sustainable oral health care.*

...finally, here is my ultimate challenge for today...

To thank everyone (and forget no-one)

First of all, I would like to thank my family and friends. It is hard to express this in only a few words, but I would not be here without them. From the bottom of my heart: thank you!

Secondly, I would like to thank the Executive Board of Radboud University, the Executive Board of Radboudumc, the dean of the medical faculty and the members of the appointment committee for creating the opportunity of this new chair and my professorship.

Special thanks go to the supervisors of my (post)doctoral studies who were crucial for my academic career: Michael Behr, Rolf Tschernig, Axel Börsch-Supan, Hendrik Jürges and Hans-Jörg Staehle.

I would also like to thank the head of department and managers of the department of dentistry, all the professors, colleagues, staff members and students of the department of dentistry and oral hygiene and all co-workers from related other departments, faculties and universities in the Netherlands and abroad. I would particularly like to thank my colleagues from Heidelberg University who are present at my inaugural lecture today.

I also want to thank everyone who has helped me on my journey to Nijmegen and made settling in to my new role such a great experience.

And last, but not least: I want to thank the registrar and his colleagues for facilitating my inaugural lecture today.

This professorship and chair offers me the best opportunity I can imagine for making great achievements in the field of quality and safety of oral health care. I look forward to all the chances and challenges along the way and many fruitful collaborations.

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